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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,615	03/25/2004	Masayuki Masuyama	67471-038	5010
7590 09/04/2008 MCDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096				
EXAMINER				
WANG, KIENT F				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/808,615

**Applicant(s)**

MASUYAMA ET AL.

**Examiner**

KENT WANG

**Art Unit**

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 19 is/are rejected.
- 7) ☒ Claim(s) 2-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. The amendments, filed on 06/30/2008, have been entered and made of record. Claims 1-19 are pending.

***Response to Arguments***

2. Applicant's arguments with respect to claims 1 and 19 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakuragi (US 2001/0033337) in view of Kudo (US 6,784,931), and further in view of Goto (US 2001/0026321).

Regarding claim 1, Sakuragi discloses an imaging device (solid state imaging pickup device) that outputs brightness information (image signal) according to an amount of incident light, comprising:

- an imaging unit (an amplification-type MOS sensor) that (a) includes a plurality of unit cells (sensor cell) arranged two-dimensionally, each unit cell (sensor cell) including a photoelectric conversion part (photodiode 1, Fig 3) that generates a

- first output voltage (output voltage in vertical signal line 15, Fig 3) in a reset state (voltage is applied to the reset signal line and the photodiode is in a reset state) and a second output voltage (voltage in horizontal signal line 17, Fig 3) according to an amount of incident light (light incident onto the sensor), and each unit cell (sensor cell) generating a reset voltage (voltage at level H pulse 103, Fig 4) that corresponds to the first output voltage (output voltage in vertical signal line 15) and a read voltage (voltage at level H pulse 102, Fig 4) that corresponds to the second output voltage (voltage in horizontal signal line 17), and (b) output the reset voltage (voltage at level H pulse 103, Fig 4) and the read voltage (voltage at level H pulse 102, Fig 4) of each unit cell (sensor cell) as signals in units of columns ([0060]-[0061], [0065], and 0070]-[0071], Sakuragi); and
- an output unit (output amplifier 20, Fig 3) operable to output, in relation to each unit cell (sensor cell), output brightness information (image signal) indicating a difference between the reset voltage (voltage pulse 103, Fig 4) and the read voltage (voltage at level H pulse 102, Fig 4) when normal light is incident to the imaging device (light incident onto the sensor) and the read voltage (voltage pulse 102, Fig 4) is in a predetermined range (reference voltage  $V_R$ ) ([0065]-[0071], Sakuragi).

Sakuragi does not disclose a signal processing unit neither outputs first brightness information indicating a difference between the reset voltage and the read voltage when normal light is incident to the imaging device and the read voltage is in a predetermined range, and nor replaces the first brightness information with second brightness information

indicating higher brightness than the first brightness information and then outputs the second brightness information when strong light is incident to the imaging device and the read voltage is not in the predetermined range.

However Kudo discloses wherein in relation to each unit cell (each pixel 200, Fig 1), the signal processing unit (the CDS circuits 12, the column selection MOS transistors 5, a clamp capacitor 13, a clamp MOS transistor 14, and a sample/hold MOS transistor 15 constitute as a signal processing unit, Fig 1) (a) outputs first brightness information indicating a difference between the reset voltage (a reset pulse signal  $\phi_{RST}$ , Fig 4) and the read voltage (a read pulse signal  $\phi_{SEL}$ , Fig 4) when normal light (a low brightness object) is incident to the imaging device (amount of light incident onto solid state imaging device 100, Fig 1) and the read voltage (a read pulse signal  $\phi_{SEL}$ ) is in a predetermined range (reference potential of the photodiode 101 Fig 2), and (b) replaces the first brightness information with second brightness information indicating higher brightness than the first brightness information and then outputs the second brightness information when strong light (a high brightness object) is incident to the imaging device (solid state imaging device 100) and the read voltage (a read pulse signal  $\phi_{SEL}$ ) is not in the predetermined range (3:4-56 and 6:66-7:61, Kudo).

Sakuragi and Kudo do not disclose a signal processing unit that (a) is formed by connecting same circuits corresponding in one-to-one to the columns, (b) processes the signals output in units of columns from the imaging unit, and (c) sequentially outputs the processed signals; and an output unit operable to (a) subject the processed signals, which have been output by the signal processing unit, to necessary conversion, and (b) output the processed signals that have been subjected to the necessary conversion.

However, Goto discloses a signal processing unit (the shift transistor SH<sub>j</sub>, capacitors CA<sub>j</sub>, CB<sub>j</sub> and clamping transistor CLP<sub>j</sub> constitute a noise canceller circuit used as a signal processing circuit, Fig 6, [0071]) that (a) is formed by connecting same circuits corresponding in one-to-one to the columns (signal processing circuits respectively attached to the vertical signal lines which are respectively provided for columns of the unit cells), (b) processes the signals output in units of columns from the imaging unit (signal processing circuits respectively attached to the vertical signal lines which are respectively provided for columns of the unit cells), and (c) sequentially outputs the processed signals (sequentially output the output signals of the signal processing circuits); and an output unit (unit cells P(i,j), Fig 6) operable to (a) subject the processed signals, which have been output by the signal processing unit, to necessary conversion (via the output line 8 of the corresponding unit cell P(i,j) as a photoelectric conversion section for photoelectrically converting incident light), and (b) output the processed signals that have been subjected to the necessary conversion (via the output line 8 of the corresponding unit cell P(i,j) as charge readout circuit for transferring charges stored in the photoelectric conversion section to a charge detecting section) ([0042], [0045]-[0047], [0067] and [0075]-[0076]).

Thus, it would have been obvious to one of ordinary skill in the art to have included the voltage output operation as taught by Kudo into Sakuragi's image pickup apparatus, as to make possible the advantages of providing an amplification type solid state imaging device capable of generating a relative light-strength detecting scheme and make it possible to take a preventive measure against shadow detail loss due to a voltage reset operation (col. 2, lines 30-34, Kudo).

Further, it would also have been obvious to one of ordinary skill in the art to have further included the signal processing circuit as taught by Goto into Sakuragi and Kudo's image pickup apparatus, as to make possible the advantages of provide a solid-state imaging device and a high-speed readout method thereof capable of suppressing a lowering in the S/N ratio even if the high-speed driving operation is effected ([0039], Goto).

Regarding claim 19, this claim differs from claim 1 only in that the claim 1 is an apparatus claim whereas claim 19 recites similar features in a method format. Thus the method claim 19 is analyzed and rejected as previously discussed with respect to claim 1 above.

#### ***Allowable Subject Matter***

5. Claims 2-18 are previously objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Shinohara et al. (US 5,933,188), Sanchez et al. (US 7,009,644), Watanabe et al (US 5,856,686), Inui (US 2001/0025969), Sakurai et al. (US 2003/0206234), Yonemoto et al. (US 6,801,253), Nomoto (US, 5,818,526), Mori et al. (US 7,148,929), Nishio et al. (US 7,263,215), Forst (US 6,753,914), Takayama et al. (US 6,683,643), Kohashi et al. (US 6,642,960), Suzuki (US 5,327,246), and Katoh et al. (US 5,625,413).

***Inquiries***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kent Wang whose telephone number is 571-270-1703. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-270-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information

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about the PAIR system, see <http://portal.uspto.gov/external/portal/pair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KW

20 Aug 2008

*/Ngoc-Yen T. VU/  
Supervisory Patent Examiner, Art Unit 2622*